UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,513	11/28/2001	Johan Nilsson	040071-245	3520

42015 7590 02/14/2006

POTOMAC PATENT GROUP, PLLC
P. O. BOX 270
FREDERICKSBURG, VA 22404

EXAMINER	
KUMAR, PANKAJ	

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/996,513	NILSSON ET AL.	
	Examiner	Art Unit	
	Pankaj Kumar	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 9-11* is/are rejected.

7)☒ Claim(s) *6-8, 12-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Response to Amendment

Drawings

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings filed 11/28/2001 are informal. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle USPN 6,560,299 in view of Lindbom USPN 5,581,580 and Kido USPN 5,255,202.

5. As per claim 1, Strolle teaches a method of determining a gain offset between transmission channels (Strolle fig. 4: tuners a and b tuning to television transmission channels; col. 1 lines 10-25; col. 2 line 5: "diversity receiver has a plurality of receive channels") in a

communication system (Strolle col. 1 lines 6-25: television broadcasting and receiving), comprising the steps of: deriving a first set of channel estimates (Strolle fig. 4: power estimator 402 and gain a comprise estimates of channel a) from symbols received through a first channel (Strolle fig. 4: tuner output a); deriving a second set of channel estimates (Strolle fig. 4: power estimator 412 and gain b comprise estimates of channel b) from symbols received through a second channel (Strolle fig. 4: tuner output b); determining the gain offset based on the first and second sets of channel estimates (Strolle fig. 4: 420; col. 8 line 63 to col. 9 line 18; col. 9 lines 12-14: gain difference between channel a and channel b; error integration to form gain) wherein each of the channel estimates is a model of one of the first and second channels (Strolle fig. 4: the power from the power estimator is a model for what the power in the channel is; the gain is a model for what the gain in the channel is) and includes one or more channel tap coefficients (not in Strolle but would be obvious as explained below).

6. Strolle does not teach that the data received into 402 and 412 are symbols. Strolle does teach symbols being transmitted in col. 1 lines 15-18. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with symbols as recited by the instant claims, being the data into 402 and 412 because Strolle suggests transmitting symbols and in order to be efficient, a system would be designed to transmit something that a receiver is going to be able to receive in the analogous art of communication system.

7. If Strolle's channel estimate and symbols are not sufficient, then Lindbom teaches channel estimates (Lindbom fig. 1: 16, 18) and symbols (Lindbom col. 3 line 23, 61). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to

arrive at the channel estimate and symbols as recited by the instant claims, because the combined teaching of Strolle with Lindbom suggest channel estimate and symbols as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Lindbom because Strolle suggests estimation and data (something broad) in general and Lindbom suggests the beneficial use of channel estimation and symbols such as to adjust the gain in fading channels in the analogous art of communication.

8. Strolle does not teach channel estimates includes one or more channel tap coefficients. Kido teaches channel estimates includes one or more channel tap coefficients (Kido fig. 31; paragraph 141 col. 21 lines 33-54; "gain characteristics of the digital filter ... are adjusted based on the filter coefficients"). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the channel estimates includes one or more channel tap coefficients as recited by the instant claims, because the combined teaching of Strolle with Kido suggest channel estimates includes one or more channel tap coefficients as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Kido because Strolle suggests channel gain estimates (something broad) in general and Kido suggests the beneficial use of channel gain estimates based on filter coefficients such as adjusting the gain to acquire a desired signal value even with frequency fluctuations (Kido col. 21 lines 49-54) in the analogous art of signal processing.

9. As per claim 4, Strolle teaches deriving a first set of channel estimates (Strolle fig. 4: power estimator 402 and gain a comprise estimates of channel a) from symbols received through the transmission channel (Strolle fig. 4: tuner output a is through the transmission channel); deriving a second set of channel estimates (Strolle fig. 4: power estimator 412 and gain b

comprise estimates of channel b) from symbols received through a second channel in the communication system (Strolle fig. 4: tuner output b is through a communication system); determining a gain offset based on the first and second sets of channel estimates (Strolle fig. 4: 420; col. 8 line 63 to col. 9 line 18; col. 9 lines 12-14: gain difference between channel a and channel b; error integration to form gain); and determining the set of complex channel estimates (Strolle fig. 9a: output of 910) based on the gain offset and the first and second sets of channel estimates (Strolle: fig. 9a is part of fig. 7 which is part of fig. 1 element 22 which is after fig. 1 element 16 which is fig. 4 which is an AGC loop) wherein each of the channel estimates is a model of one of the first and second channels (Strolle fig. 4: the power from the power estimator is a model for what the power in the channel is; the gain is a model for what the gain in the channel is) and includes one or more channel tap coefficients (not in Strolle but would be obvious as explained below).

10. Strolle does not teach that the data received into 402 and 412 are symbols. Strolle does teach symbols being transmitted in col. 1 lines 15-18. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with symbols as recited by the instant claims, being the data into 402 and 412 because Strolle suggests transmitting symbols and in order to be efficient, a system would be designed to transmit something that a receiver is going to be able to receive in the analogous art of communication system.

11. If Strolle's channel estimate and symbols are not sufficient, then Lindbom teaches channel estimates (Lindbom fig. 1: 16, 18) and symbols (Lindbom col. 3 line 23, 61). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to

arrive at the channel estimate and symbols as recited by the instant claims, because the combined teaching of Strolle with Lindbom suggest channel estimate and symbols as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Lindbom because Strolle suggests estimation and data (something broad) in general and Lindbom suggests the beneficial use of channel estimation and symbols such as to adjust the gain in fading channels in the analogous art of communication.

12. Strolle does not teach channel estimates includes one or more channel tap coefficients. Kido teaches channel estimates includes one or more channel tap coefficients (Kido fig. 31; paragraph 141 col. 21 lines 33-54; "gain characteristics of the digital filter ... are adjusted based on the filter coefficients"). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the channel estimates includes one or more channel tap coefficients as recited by the instant claims, because the combined teaching of Strolle with Kido suggest channel estimates includes one or more channel tap coefficients as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Kido because Strolle suggests channel gain estimates (something broad) in general and Kido suggests the beneficial use of channel gain estimates based on filter coefficients such as adjusting the gain to acquire a desired signal value even with frequency fluctuations (Kido col. 21 lines 49-54) in the analogous art of signal processing.

13. As per claim 9, Strolle teaches deriving a first set of channel estimates (Strolle fig. 4: comprising the estimates of channel a include power estimator 402, gain a; fig. 7: 712 a, b) from symbols received through the transmission channel (Strolle fig. 4: tuner output a is through the transmission channel); deriving a second set of channel estimates (Strolle fig. 4: comprising the

estimates of channel b include power estimator 412, gain b; fig. 7: 712 a, b) from symbols received through a second channel in the communication system (Strolle fig. 4: tuner output b is through a communication system); determining a gain offset based on the first and second sets of channel estimates (Strolle fig. 4: 420; col. 9 lines 12-14: gain difference between channel a and channel b); determining a set of channel estimate gains (Strolle fig. 4: outputs of 430, 432 are estimates of gains as incorporated by the signals that control the amount of gain RF AGC A, IF AGC A, RF AGC B, IF AGC, B) based on the gain offset and the first and second sets of channel estimates (Strolle fig. 4: outputs of 430, 432 are based on 420, power estimators a, b and gains a, b); and associating the set of channel estimate gains (Strolle fig. 4: outputs of 430, 432) with channel estimate phases (Strolle fig. 7: 712a, b are phase detectors which are associated with fig. 4 outputs of 430, 432 as taught in fig. 1 with fig. 7 being after fig. 4) of one of the first and second sets of channel estimates (Strolle fig. 7 phase detectors are based of fig. 4: power estimators 402, 412, gains a, b as taught in fig. 1 with fig. 7 being after fig. 4) wherein each of the channel estimates is a model of one of the first and second channels (Strolle fig. 4: the power from the power estimator is a model for what the power in the channel is; the gain is a model for what the gain in the channel is) and includes one or more channel tap coefficients (not in Strolle but would be obvious as explained below).

14. Strolle does not teach that the data received into 402 and 412 are symbols. Strolle does teach symbols being transmitted in col. 1 lines 15-18. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with symbols as recited by the instant claims, being the data into 402 and 412 because Strolle suggests transmitting symbols and in order to be efficient, a system would be designed to

transmit something that a receiver is going to be able to receive in the analogous art of communication system.

15. If Strolle's channel estimate and symbols are not sufficient, then Lindbom teaches channel estimates (Lindbom fig. 1: 16, 18) and symbols (Lindbom col. 3 line 23, 61). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the channel estimate and symbols as recited by the instant claims, because the combined teaching of Strolle with Lindbom suggest channel estimate and symbols as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Lindbom because Strolle suggests estimation and data (something broad) in general and Lindbom suggests the beneficial use of channel estimation and symbols such as to adjust the gain in fading channels in the analogous art of communication.

16. Strolle does not teach channel estimates includes one or more channel tap coefficients. Kido teaches channel estimates includes one or more channel tap coefficients (Kido fig. 31; paragraph 141 col. 21 lines 33-54; "gain characteristics of the digital filter ... are adjusted based on the filter coefficients"). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the channel estimates includes one or more channel tap coefficients as recited by the instant claims, because the combined teaching of Strolle with Kido suggest channel estimates includes one or more channel tap coefficients as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Kido because Strolle suggests channel gain estimates (something broad) in general and Kido suggests the beneficial use of channel gain estimates

based on filter coefficients such as adjusting the gain to acquire a desired signal value even with frequency fluctuations (Kido col. 21 lines 49-54) in the analogous art of signal processing.

17. As per claim 10, Strolle in view of Lindbom and Kido teach the method of claim 9, wherein the associated channel estimate phase (Strolle fig. 7: 712 a, b) is the one of the first and second sets of channel estimates (Strolle fig. 7: 712 a, b are part of the sets of channel estimates) being from a high-power channel (not in Strolle but would be obvious as explained below).

18. Strolle teaches channel but does not teach high-power channel in the fig. 7 embodiment. However, Strolle does teach high power channel in col. 9 lines 25-26. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with high power channel as recited by the instant claims, because Strolle suggests transmission and reception and in order for the TV receiver to receive many miles away from the transmitter, the transmitter has to be high power in the analogous art of communication systems.

19. Claims 2, 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle in view of Lindbom and Kido as applied to claim 1 above and further in view of Choi USPN 6,754,473.

20. As per claim 2, Strolle in view of Lindbom and Kido teach claim 1. Strolle does not teach pilot channels. Choi teaches pilot channels (Choi fig. 1: 101, 111; col. 2 lines 15-20). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the pilot channels as recited by the instant claims, because the combined teaching of Strolle with Choi suggest pilot channels as recited by the instant claims.

Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Choi because Strolle suggests data (something broad) in general and Choi suggests the beneficial use of data being pilot channels (such as pilot channels being all 1's (Choi col. 2 line 21) and then scrambling pilot channels in order to indicate the base station (Choi col. 2 lines 18-35) so that the receiver can known the strength from each base station and adjust weights accordingly (Choi col. 1 lines 47-52) for better reception in the analogous art of communication system and diversity reception.

21. As per claim 3, Strolle in view of Lindbom and Kido teach claim 1. Strolle does not teach that the channels are DPCH and CPICH. Choi teaches that the channels are DPCH and CPICH (Choi col. 2 lines 10-15: CPICH; col. 15 lines 4-17: recovering CPICH in one line or channel and DPCH in another line or channel in conjunction with fig. 10: 1003, 1005, 1007). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the DPCH and CPICH as recited by the instant claims, because the combined teaching of Strolle with Choi suggest DPCH and CPICH as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Choi because Strolle suggests channels (something broad) in general and Choi suggests the beneficial use of channels being DPCH and CPICH (such as using the DPCH as a paging channel (as DPCH stands for data paging channel) in order to page an end unit in order to verify the possibility of communication and using the CPICH as a channel estimator (Choi col. 15 lines 18-30))) in the analogous art of communication system.

22. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle in view of Lindbom and Kido as applied to claim 10 above and further in view of Choi USPN 6,754,473.

23. As per claim 11, Strolle in view of Lindbom and Kido teach the method of claim 10, wherein the associated channel estimate phase (Strolle fig. 7: 712 a, b) is the one of the first and second sets of channel estimates (Strolle fig. 7: 712 a, b are part of the sets of channel estimates) being from a DPCH channel (not in Strolle but would be obvious).

24. Strolle does not teach DPCH channel. Choi teaches DPCH channel (Choi col. 15 lines 4-17: recovering DPCH in a channel in conjunction with fig. 10: 1007). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the DPCH as recited by the instant claims, because the combined teaching of Strolle with Choi suggest DPCH as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Choi because Strolle suggests channels (something broad) in general and Choi suggests the beneficial use of channels being DPCH (such as using the DPCH as a paging channel (as DPCH stands for data paging channel) in order to page an end unit in order to verify the possibility of communication) in the analogous art of communication system.

25. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle in view of Lindbom and Kido as applied to claim 4 above and further in view of Dufour USPN 6,700,537.

26. As per claim 5, Strolle in view of Lindbom and Kido teach claim 4. Strolle does not teach that the gain offset uses a second order equation Dufour teaches that the variance which is proportional to the square of the difference in gain (Dufour col. 10 line 59 to col. 11 line 4:

variance being the square of the standard deviation which is based on the gain difference) and hence variance is a second order equation which is used to determine whether the gain difference calculated is an acceptable value (Dufour col. 11 lines 1-2). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with Dufour's teaching of the gain offset is determined using a second order equation as recited by the instant claims, because Dufour suggests knowing whether the calculation is an acceptable value in the analogous art of determining the gain offset.

Allowable Subject Matter

27. Claims 6-8, 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

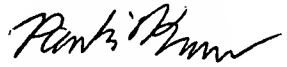
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Mon, Tues, Thurs and Fri after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Pankaj Kumar
Patent Examiner
Art Unit 2631

PK